

Message

From: Wayne Nastri [wnastri@aqmd.gov]
Sent: 9/19/2016 2:44:59 AM
To: Lawrence, Kathryn [Lawrence.Kathryn@epa.gov]; Manzanilla, Enrique [Manzanilla.Enrique@epa.gov]
CC: Jill Whynot [JWhynot@aqmd.gov]; Philip Fine [pfine@aqmd.gov]; Jo Kay Ghosh [jghosh@aqmd.gov]; Denise Whitcher [DWhitcher@aqmd.gov]
Subject: HF analysis and alternatives paper for RMP
Attachments: CSBReverseEngineering1.pdf

Below and attached were recently submitted to us. I present for your review and consideration.

Dear Drs. Nastri, Tisopulos, Lyou, and SCAQMD Board Member Mitchell,

As I cannot attend Monday's RMP Meeting, I want to share with you my analysis of MHF/HF before I submit it to rxiv.org and other scientific publications. I send it to you, because, to date, CSB and SCAQMD have been unable to look rigorously and independently at the decision to use HF/MHF, and to assess how effective the Sulfolane additive in MHF really is in suppressing HF volatility and aerosol formation.

This paper is part 1 of a series examining industrial gas dispersion. Reverse-engineering documents supplied by the Torrance Refinery's "Safety Advisor" reveals very serious deceptions about the volatility-suppression properties of MHF. The Torrance Refinery Safety Advisor claimed that MHF is slightly better than H₂SO₄ with regard to not forming an aerosol. This is shown to be dubious, because the "tests" of MHF aerosol formation substituted a refrigerant for the alkylation hydrocarbons. I have deduced the identity of the refrigerant with near certainty; it is 4.74 times as dense as air and 2-4 times as dense as the alkylation reactants. No wonder the HF mixture traveled close to ground and fell in the water pools where it was collected!

Along with David Campbell of USW I-675, and Sally Hayati, we did look into alternatives to HF, and learned part of what you offer in the Norton Engineering report. We had talked to Kevin Bockwinkel at DuPont/Stratco regarding H₂SO₄ and also to Mukund at CB&I regarding AlkyClean. We were aware that switching to H₂SO₄ would about cost 4 times as much as switching to Solid Acid Catalyst. David and I had separately concluded that an H₂SO₄ conversion would cost about \$300 million for the Torrance Refinery, so I am a little surprised at Norton's estimate \$111 million.

Clearly the oil companies will resist the very high cost of conversion to H₂SO₄, and government agencies and the public won't be able to counter that resistance, even to the \$100 million price tag. Strategies and time frame for converting from HF to safer alternatives depend on the real viability of ionic liquid and solid acid catalysts. I would have hoped for a little more specifics from Norton on the realistic timeline for ionic liquid and solid acid catalyst commercialization.

I look forward to hearing from you. The paper is attached.

Sincerely,

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Wayne Natri

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